



STATE OF WASHINGTON

## STATE BUILDING CODE COUNCIL

### Washington State Energy Code Development Standard Energy Code Proposal Form

May 2018

Log No. \_\_\_\_\_

Code being amended: ☒ Commercial Provisions ☐ Residential Provisions

Code Section # Table C406.1 and Sections C406.8 and C406.9 \_\_\_\_\_

Brief Description:

This proposal adds options for Efficient Gaseous Fuel Water Heater to the Efficiency Packages in Section C406. These options are included in the 2021 IECC.

Proposed code change text: (Copy the existing text from the Integrated Draft, linked above, and then use underline for new text and ~~strikeout~~ for text to be deleted.)

Table C406.1 Efficiency Package Credits (Note: the rest of the table stays the same other than renumbering current options 10, 11 & 12 to options 12, 13 & 14 in the table)

8. High-efficiency service water heating in accordance with Sections C406.8.1 and C406.8.2.1 thru C406.8.2.3	4.0	5.0	NA	NA	NA	8.0
<u>9. Efficient gaseous fuel water heater in accordance with Sections C406.8.1 and C406.8.2.4</u>	<u>9.0</u>	<u>9.0</u>	<u>NA</u>	<u>3.0</u>	<u>NA</u>	<u>9.0</u>
<del>9.</del> <u>10.</u> High performance service water heating in multi-family buildings in accordance with Section C406.9.1	7.0	8.0	NA	NA	NA	NA
<u>11. Efficient gaseous fuel water heater in accordance with Sections C406.9.2</u>	<u>9.0</u>	<u>9.0</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

**C406.8.2 Load fraction.** Not less than 60 percent of the annual service hot water heating energy use, or not less than 100 percent of the annual service hot water heating energy use in buildings with water-cooled systems subject to the requirements of Section C403.9.5 or qualifying for one of its exceptions, shall be provided by one or more of the following:

1. Service hot water system delivering heating requirements using heat pump technology with a minimum

COP of 3.0. For air-source equipment, the COP rating will be reported at the design leaving heat pump water temperature with an entering air temperature of 60°F (15.6°C) or lower. For water-source equipment, the COP rating will be reported at the design leaving load water temperature with an entering water temperature of 74°F (23.3°C) or lower.

2 Waste heat recovery from service hot water, heat recovery chillers, building equipment, process equipment, or other *approved* system. Qualifying heat recovery must be above and beyond heat recovery required by other sections of this code.

3 On site renewable energy water-heating systems

4. Efficient gaseous fuel water heater. The combined input-capacity weighted-average equipment rating of all gaseous fuel water-heating equipment in the building shall be not less than 95 percent Et or 0.95 EF. This option shall receive only half the listed credits for buildings required to comply with Section C404.2.1

**C406.9 High performance service water heating in multifamily buildings.** For a whole building, building addition, or tenant space with not less than 90 percent of the *conditioned floor area* being Group R-2 occupancy, not less than 90 percent of the annual building service hot water energy use shall be provided by:

1. A heat pump system with a minimum COP of 3.0. This efficiency package is allowed be taken in addition to Section C406.8.2; or
2. Efficient gaseous fuel water heater. The combined input-capacity weighted-average equipment rating of all gaseous fuel water-heating equipment in the building shall be not less than 95 percent Et or 0.95 EF. This option shall receive only half the listed credits for buildings required to comply with Section C404.2.1

Purpose of code change:

*This adds legitimate high efficiency options to the Efficiency Packages and are consistent with 2021 IECC.*

Your amendment must meet one of the following criteria. Select at least one:

- |  |  |
|--|--|
| <input type="checkbox"/> Addresses a critical life/safety need.  | <input checked="" type="checkbox"/> Consistency with state or federal regulations. |
| <input checked="" type="checkbox"/> The amendment clarifies the intent or application of the code.                                     | <input type="checkbox"/> Addresses a unique character of the state.                |
| <input checked="" type="checkbox"/> Addresses a specific state policy or statute.<br>(Note that energy conservation is a state policy) | <input type="checkbox"/> Corrects errors and omissions.                            |

Check the building types that would be impacted by your code change:

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Single family/duplex/townhome | <input checked="" type="checkbox"/> Multi-family 4 + stories | <input checked="" type="checkbox"/> Institutional |
| <input type="checkbox"/> Multi-family 1 – 3 stories    | <input checked="" type="checkbox"/> Commercial / Retail      | <input checked="" type="checkbox"/> Industrial    |

Your name                      Dan Kirschner                      Email address                      dkirschner@nwga.org

Your organization              NW Gas Association                      Phone number                      (503) 344-6637

Other contact name      Chris Burroughs, Puget Sound Energy

**Instructions:** Send this form as an email attachment, along with any other documentation available, to: [sbcc@des.wa.gov](mailto:sbcc@des.wa.gov). For further information, call the State Building Code Council at 360-407-9278.

## Economic Impact Data Sheet

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants and businesses.

According to PNNL Technical Brief on Relative Credits for Extra Efficiency Code Measures, this proposal would result in savings for Primary Schools of 8.37 therms/1000 SF in CZ 4C and 9.39 therms/1000 SF in CZ 5B and savings for Midrise Apartments of 23.14 therms/1000 SF in CZ 4C and 24.61 therms/1000 SF in CZ 5B using a baseline of 80% Et natural gas water heater. The savings to building owners, tenants and businesses redounds from consumer choice of affordable and efficient natural gas as part of the energy service mix.

Provide your best estimate of the construction cost (or cost savings) of your code change proposal? (See OFM Life Cycle Cost [Analysis tool](#) and [Instructions](#); use these [Inputs](#). [Webinars on the tool can be found Here and Here](#))

\$[Click here to enter text.](#)/square foot (For residential projects, also provide \$[Click here to enter text.](#)/ dwelling unit)

Show calculations here, and list sources for costs/savings, or attach backup data pages

This is from Puget Sound Energy's commercial water heating program.

### Incremental Measure Cost and Incentives

Incremental measure cost (IMC) for the commercial water heating measures is the cost difference between a baseline efficiency unit and one that meets the program efficiency requirements. The IMCs from several different TRMs and the CA Work Papers were compared. The resulting IMCs are a combination of the MA and CA IMC values, market provided data, and are supported by historical program data. The historical program data includes cost data from over 4,000 units participating over three years. The IMC values will be updated with local data once the program has enough data. IMC values are presented per MBH input capacity to account for variation in cost throughout the range of input capacities available in the market.

Table 9: IMC Coverage

Measure Description	IMC / MBH	% of IMC Covered
Condensing Tankless Water Heater	\$3.43	87%
Condensing Storage Water Heater	\$5.68	88%
Condensing Domestic Hot Water Boiler	\$10.24	49%

Provide your best estimate of the annual energy savings (or additional energy use) for your code change proposal?

[Click here to enter text.](#)KWH/ square foot (or) .837-.939 KBTU/ square foot for Primary Schools and 2.31-2.46 KBTU/square foot for Midrise Apartments.

(For residential projects, also provide [Click here to enter text.](#)KWH/KBTU / dwelling unit)

Show calculations here, and list sources for energy savings estimates, or attach backup data pages

Source is PNNL Technical Brief on Relative Credits for Extra Efficiency Code Measures dated Dec. 2018. Technical Brief can be provided upon request.

List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:

**All questions must be answered to be considered complete. Incomplete proposals will not be accepted.**